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REMARKS

Claims 1-9, 11-35, and 37-52 are currently pending in the subject application, and are presently under consideration. Claims 1-9, 11, 14-35, 37, and 40-52 are rejected. Claims 12, 13, 38, and 39 have been indicated as allowable. Previously cancelled claims 10 and 36 have been indicated as having allowable subject matter. Claims 1, 12, 27, and 38 have been amended. New claims 56-60 have been added. Favorable reconsideration of the application is requested in view of the amendments and comments herein.

I. Rejection of Claims 1, 2, 18-28, and 44-52 Under 35 U.S.C. §103(a)

Claims 1, 2, 18-28, and 44-52 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. No. 5,659,545 to Sowles et al. ("Sowles") in view of U.S. Pat. No. 5,802,044 to Baum et al. ("Baum"), and further in view of U.S. Pat. No. 4,577,316 to Schiff ("Schiff"). Withdrawal of this rejection is respectfully requested for at least the following reasons.

Amended claim 1 recites a method of synchronizing an earth terminal in a satellite communication network comprising maintenance of a downlink symbol counter clocked at a downlink clock rate, determination of a downlink symbol count representative of a time of arrival at a satellite of a burst transmitted from an earth terminal, adjustment of said downlink symbol counter to correspond to said downlink symbol count. Amended claim 1 also recites that the method of synchronizing an earth terminal in a satellite communication network comprises transmission of synchronization bursts from said earth terminal to said satellite in accordance with said downlink symbol counter, determination at said satellite whether said synchronization bursts received at said satellite are one of early, late, absent, and on time; and reporting in a downlink signal to said earth terminal a code representing whether said synchronization burst received at said satellite is one of early, late, absent and on time.

Sowles discloses the measurement of timing and frequency offsets to discover if there is propagation delay in communications between a satellite and subscriber unit. Baum discloses a reverse link symbol timing synchronization method where the subscriber unit will receive a

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round trip delay value that is positive or negative to reflect whether the transmitted burst was early or late. Neither Sowles nor Baum teach or suggest employing a downlink symbol count that is representative of a time of arrival at a satellite of a synchronization burst and adjusting a downlink symbol counter to correspond to the downlink symbol count to synchronize an earth terminal in a satellite communication network, as recited in independent claim 1.

Schiff does not cure the aforementioned deficiencies with respect to Sowles and Baum. Schiff discloses a transmitter timing register incremented by the number of clock pulses of transmission delay. The Office Action rejection fails to appreciate that the transmitter timing register is not the same as the downlink symbol counter as recited in claim 1. The timing register of Schiff increments with each clock pulse during a transmission, with a certain amount of data being transmitted between each clock pulse. The downlink symbol counter as recited in claim 1, however, is adjusted based on a symbol count received at the earth terminal, thus resulting in a finer measured resolution and hence a more accurate representation of transmission time. Therefore, none of Sowles, Baum, or Schiff, alone or in combination, teach or suggest the elements recited in claim 1. Therefore, claim 1 should be allowable over the cited art. Claims 2 and 18-26 depend directly or indirectly from claim 1 and therefore contain each and every element recited in claim 1. Therefore, for the reasons set forth above, claims 1, 2, and 18-26 should be patentable over the cited art, and withdrawal of the rejection with respect to claims 1, 2, and 18-26 is respectfully requested.

Amended claim 27 recites a synchronization method for a satellite communication network comprising the establishment of a communication satellite in orbit, the establishment of an earth terminal in communication with said satellite, generation of a master clock on said satellite, transmission of downlink symbols synchronously with said master clock from said satellite to said earth terminal, maintenance of said earth terminal a downlink symbol counter clocked at a downlink clock rate, determination of a downlink symbol count representative of a time of arrival of a burst transmitted from an earth terminal to a satellite, adjustment of said downlink symbol counter to correspond to said downlink symbol count upon receipt of a

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predetermined reference point in a downlink frame, and transmitting synchronization bursts from said earth terminal to said satellite in accordance with said downlink symbol counter.

Neither Sowles nor Baum teach or suggest employing a downlink symbol count that is representative of a time of arrival at a satellite of a synchronization burst and adjusting a downlink symbol counter to correspond to the downlink symbol count upon receipt of a predetermined reference point in a downlink, as recited in independent claim 27.

Schiff does not cure the aforementioned deficiencies with respect to Sowles and Baum. Schiff discloses a transmitter timing register incremented by the number of clock pulses of transmission delay. The timing register of Schiff increments with each clock pulse during a transmission, with a certain amount of data being transmitted between each clock pulse. The timing register in Schiff is therefore counting clock pulses, and not symbols sent across the transmission. Therefore, Schiff does not teach or suggest that which is being recited in amended claim 27. Thus, for at least these reasons, amended claim 27, as well as claims 28 and 44-52 which depend therefrom, should be allowed and withdrawal of the rejection with respect to claims 27, 28, and 44-52 is respectfully requested.

For the reasons described above, claims 1, 2, 18-28, and 44-52 should be patentable over the cited art. Accordingly, withdrawal of this rejection is respectfully requested.

II. Rejection of Claims 3-9, 11, 14-17, 26, 29-35, 37, 40-43, and 52 Under 35 U.S.C. §103(a)

Claims 3-9, 11, 14-17, 26, 29-35, 37, 40-43, and 52 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Sowles in view of Baum, Schiff, and U.S. Pat. No. 5,867,489 to Hershey et al. ("Hershey"). Withdrawal of this rejection is respectfully requested for at least the following reasons.

Hershey recites a way to determine the distance between the ground stations and satellites and providing the position of the satellite to the earth terminal. It also recites a way for ground stations to derive information about a spacecraft from despread a ranging signal from a master

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ground station. However, Hershey does not teach or suggest a downlink symbol counter based on a number of symbols received by the earth station from the satellite, as recited in independent claims 1 and 27. Claims 3-9, 11, 14-17 and 26 depend directly or indirectly from claim 1, and claims 29-35, 40-43 depend directly or indirectly from claim 27. Hershey does not make up for the aforementioned deficiencies of Sowles, Baum and Schiff with respect to independent claims 1 and 27. Therefore, for at least this reason, claims 3-9, 11, 14-17, 26, 29-35, 37, 40-43, and 52 are not obvious in light of the cited art. Accordingly, withdrawal of this rejection is respectfully requested.

III. New Claims 56-60

New Claims 56-60 have been added. New claim 56 is identical to previously cancelled claim 10. New claim 57 is identical to previously cancelled claim 36. New claims 58-60 are an amended version of rejected and subsequently cancelled claims 53-55. New claims 56-60 should be allowed for at least the following reasons.

New claim 56 is identical to former claim 10, which was dependent from claim 1 and to which it was objected due to dependence on a rejected base claim. As discussed above, amended claim 1 is not obvious over the cited art, individually or in combination, and is thus allowable. Since new claim 56 depends from claim 1, it should also be allowable. Allowance of new claim 56 is respectfully requested.

New claim 57 is identical to former claim 36, which was dependent from claim 27 and to which it was objected due to dependence on a rejected base claim. As discussed above, amended claim 27 is not obvious over the cited art, individually or in combination, and is thus allowable. Since new claim 57 depends from claim 27, it should also be allowable. Allowance of new claim 57 is respectfully requested.

New claim 58 recites a method of synchronizing an earth terminal in a satellite communication network comprising transmission of synchronization bursts from an earth terminal to a satellite in accordance with a downlink symbol counter. New claim 58 also recites a code reported to the earth terminal representing whether the synchronization burst received at

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the satellite is one of early, late, absent and on time. New claim 59 recites a system for synchronizing an earth terminal with a satellite in a communication network comprising an earth terminal transmitting a synchronization burst in accordance with a downlink symbol counter, and said satellite reporting to said earth terminal a code representing whether said synchronization burst received at said satellite is one of early, late, absent and on time.

Sowles discloses a subscriber unit that adjusts its time for a propagation delay over a range from 2.3 to 11 milliseconds. The Office Action argues that this time adjustment delay range of 2.3 to 11 milliseconds proves an inherent timer means, and thus a downlink symbol counter. A symbol counter is not similar to a timer residing at an earth station. Furthermore, Sowles specifically teaches that the transmit time is adjusted based on information received in task 113 (col. 11, ll. 33-34) (*i.e.*, timing and frequency offset information in downlink sync message (col. 11, ll. 13-16)) based on synchronization bursts sent in task 112. Therefore, Sowles simply employs timing error information to adjust synchronization bursts, while synchronization, as recited in new claims 58 and 59, is performed by transmitting synchronization bursts in accordance with a downlink symbol counter, which is based on a number of symbols received by the earth station from the satellite. This adjustment of synchronization bursts based on a downlink symbol counter is not taught or suggested by Sowles.

Baum discloses a reverse link symbol timing synchronization method where the subscriber unit will receive a round trip delay value that is positive or negative to reflect whether the transmitted burst was early or late. The system recited in Baum, however, does not teach or suggest a communication system for satellite to ground terminal communications that employs a symbol counter for synchronization of signal communications, as recited in new claims 58 and 59. Therefore, neither Sowles nor Baum, alone or in combination, teach or suggest the elements recited in new claims 58 and 59.

New claim 60 depends from new claim 58 and recites an adjustment of the downlink symbol counter to account for timing errors in the synchronization burst between the satellite and the ground terminal. Neither Sowles nor Baum teach or suggest adjusting a downlink symbol counter to account for timing errors in a synchronization burst. Furthermore, neither Sowles nor

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Baum recite the use of a symbol counter for synchronization of signal communications with respect to new claim 58 from which new claim 60 depends. Therefore, neither Sowles nor Baum, alone or in combination, teach or suggest the elements recited in claim 60.

For the reasons described above, new claims 56-60 should be patentable over the cited art.

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CONCLUSION

In view of the foregoing remarks, Applicant respectfully submits that the present application is in condition for allowance. Applicant respectfully requests reconsideration of this application and that the application be passed to issue.

Please charge any deficiency or credit any overpayment in the fees for this amendment to our Deposit Account No. 20-0090.

Respectfully submitted,

Date

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